

Variable Speed Rotor System, Phase I

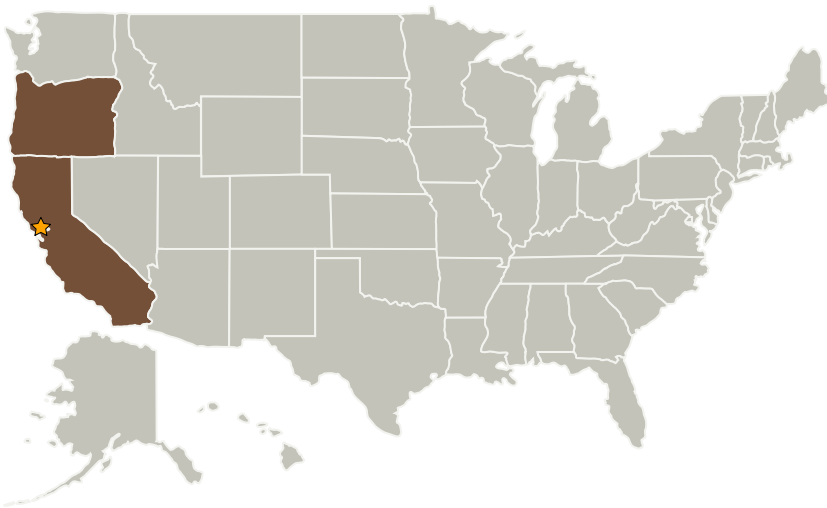
Completed Technology Project (2008 - 2008)



Project Introduction

Variable speed rotors will give helicopters several advantages: higher top speed, greater fuel efficiency, momentary emergency over-power, resonance detuning capability and a reduction in noise. The applicant proposes to develop such a system using a doubly-fed planetary gear box with advanced SiC-based power electronics and motors. The new components enabling variable speed will be rated at a fraction of the total helicopter power rating, thus reducing weight dramatically. The resulting hybrid mechanical/electrical power system also gives, in addition to greater fuel efficiency, smooth continuous speed variations with electronics, inherent starting capability (e.g., elimination of the existing starter motor), simplification of the tail rotor system, and the ability to enhance power to the main rotor with batteries and the APU. Feasibility will be determined in Phase I by the applicant with the assistance of a major helicopter manufacturer.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Ames Research Center (ARC)	Lead Organization	NASA Center	Moffett Field, California
Peregrine Power, LLC	Supporting Organization	Industry	Wilsonville, Oregon



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

California

Oregon

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Dallas Marckx

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
 - └ TX02.1 Avionics Component Technologies
 - └ TX02.1.1 Radiation Hardened Extreme Environment Components and Implementations